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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/585,577	QIU ET AL.	
	Examiner	Art Unit	
	Christina Y. Leung	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16 and 22-25* is/are rejected.

7)☒ Claim(s) *17-21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11-6-2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. **Claims 22 and 23** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 22 and 23 each make reference to an industry standard (i.e., "the Storage Networking Industry Association standard") and are indefinite because standards may change over time. Since the organizations implementing standards may change them, any connection claims may have to these standards may have varying scope over time. It is inappropriate to have the scope of the claims change over time. Furthermore, if the standard changes, the disclosure may no longer support the limitation and may become non-enabling.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claim 25** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 25 is directed to a process. However, the claim does not require that the process particularly transform a particular article or that the steps be implemented by a particular machine. Although the claim refers to elements such as a source computer and a destination

computer, none of the process steps (e.g., "connecting" the computers and "determining the length of the burst") are performed by or tied to a particular machine.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1, 6-11, and 25** are rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** (US 5,793,770 A) in view of **Duser et al.** ("Analysis of a Dynamically Wavelength-Routed Optical Burst Switched Network Architecture," IEEE Journal of Lightwave Technology, Vol. 20, NO. 4, April 2002).

Regarding **claim 1**, St. John et al. disclose a control device (e.g., HIPPI interface 12, sending gateway 14, and receiving gateway 18' shown in Figure 1) for controlling the optical data transmission in optical burst switching mode between a source computer (e.g., computer 10) and a destination computer (e.g., computer 24), the control device being connected to the source computer and to the destination computer;

adapted such that in case of a burst to be transmitted from the source computer to the destination computer, the length of the burst is determined based on a parameter indicating an available buffer size of the destination computer (column 3, lines 4-9; column 4, lines 48-58; column 5, lines 30-53; and column 13, lines 16-27).

Similarly, regarding **claim 25**, as well as the claim may be understood with respect to 35 U.S.C. 101 discussed above, St. John et al. disclose a method for controlling the optical data

transmission in an optical burst switching mode between a source computer (e.g., computer 10) and a destination computer (e.g., computer 24), comprising the steps of

connecting the source computer to the destination computer; in case of a burst to be transmitted from the source computer to the destination computer (Figure 1 shows the connection between computer 10 and computer 24),

determining the length of the burst based on a parameter indicating an available buffer size of the destination computer (column 3, lines 4-9; column 4, lines 48-58; column 5, lines 30-53; and column 13, lines 16-27).

Regarding claims 1 and 25, St. John et al. do not further specifically disclose that the length of the burst is also determined based on a predetermined timeout value parameter indicating a time after which improper burst transmission is assumed to have occurred.

However, Duser et al. teach a system that is related to the one described by St. John et al., including data transmission in optical burst switching mode (Abstract; page 575, Figure 1; page 576, Figure 2). Duser et al. further teach determining the length of the burst based on a predetermined timeout value parameter indicating a time after which improper burst transmission is assumed to have occurred (Duser et al. teach that packets are aggregated into a burst at the transmitter until "a timeout signal for delay-sensitive data"; see pages 577-578, "B. Burst Aggregation and Timing Diagrams").

Regarding claims 1 and 25, it would have been obvious to a person of ordinary skill in the art to include a timeout value parameter as taught by Duser et al. in the system disclosed by St. John et al. in order to ensure that the bursts are transmitted in a timely manner and that users do not wait too long to receive the data.

Regarding **claim 6**, St. John et al. in view of Duser et al. teach a system as discussed above with regard to claim 1, including determining burst length in dependence of both available destination buffer size parameter and a timeout value parameter. The system suggested by St. John et al. in view of Duser et al. is adapted such that the length of the burst is determined in dependence of a minimum of the parameter indicating an available buffer size of the destination computer and of the predetermined timeout value parameter indicating a time after which improper burst transmission is assumed to have occurred. Specifically, it would be well understood in the communications art that the system suggested by St. John et al. in view of Duser et al. requires the burst length to be both not larger than the available destination buffer and not further extended after a timeout has occurred, and in order to meet both requirements, the burst length would depend on a minimum of the parameters.

Regarding **claim 7**, St. John et al. do not specifically disclose accumulating data, but Duser et al. teach that data to be transmitted is accumulated at the transmitter (i.e., the source computer in the system described by St. John et al. in view of Duser et al.) until the size of the data to be transmitted generally equals the determined length of the burst to be transmitted (pages 577-578, "B. Burst Aggregation and Timing Diagrams"). It would have been obvious to a person of ordinary skill in the art to accumulate data as taught by Duser et al. in the system described by St. John et al. in view of Duser et al. in order to properly build the already-disclosed bursts from individual data packets.

Regarding **claim 8**, in the system described by St. John et al. in view of Duser et al., St. John et al. disclose that based on the determined length of the burst to be transmitted, resources

for transmitting the burst are reserved and the burst is transmitted (i.e., via sending gateway 14 shown in Figure 1.

Regarding **claims 9-11**, St. John et al. disclose optical burst transmission do not specifically disclose an optical burst switch network. However, in the system suggested by St. John in view of Duser et al., Duser et al. further teach an optical burst switch network (Abstract; page 575, Figure 1; page 576, Figure 2), which is adapted such that the optical burst switch network comprises means for sending a control packet followed by the burst after a predetermined offset time (page 577, Figure 3; pages 577-578, "B. Burst Aggregation and Timing Diagrams") and means for sending a reservation confirmation packet indicating that reservation has been performed (page 577, Figure 3; pages 577-578, "B. Burst Aggregation and Timing Diagrams"). Regarding claims 9-11, it would have been obvious to a person of ordinary skill in the art to include an optical burst switch network with control packets and reservation confirmation packets as taught by Duser et al. in the system described by St. John et al. in view of Duser et al. in order to effectively transmit greater amounts of information between a large number of nodes/users.

7. **Claims 2, 5, and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.** as applied to claims 1 and 8 above, and further in view of **Beshai et al**. (US 7,215,666 B1).

Regarding **claims 2 and 5**, St. John et al. in view of Duser et al. describe a system as discussed above with regard to claim 1. They do not specifically disclose that the length of the burst is determined further based on an initial window size indicating a number of data packets

which the source computer is able to send before waiting for an acknowledgement or on a peak service rate which the destination computer is able to service.

However, Beshai et al. teach a system that is related to the one described by St. John et al. in view of Duser, including optical burst mode transmission (Abstract). Regarding claim 2, they further teach that the length of the burst may be determined based on an initial window size indicating a number of data packets which the source computer is able to send before waiting for an acknowledgement (column 2, lines 16-29). It would have been obvious to a person of ordinary skill in the art to further base the length of the burst on a number of packets which the source computer is able to send before waiting for an acknowledgement as taught by Beshai et al. in the system described by St. John et al. in view of Duser et al. in order to advantageously enable bursts to be sent efficiently without the delay caused by waiting for acknowledgment messages.

Regarding claim 5, Beshai et al. also teach that the length of the burst may be determined based on a peak service rate (i.e., bit rate) which the destination computer is able to service (column 9, lines 56-62; column 10, lines 13-17; column 12, lines 17-53). It would have been obvious to a person of ordinary skill in the art to further base the length of the burst on a peak service rate as taught by Beshai et al. in the system described by St. John et al. in view of Duser et al. in order to optimize the efficiency of the data transmission in the network.

Regarding **claim 12**, St. John et al. in view of Duser et al. describe a system as discussed above with regard to claim 8. They do not specifically disclose that the reservation and transmission is realized by dividing, in the time domain, a burst to be transmitted into a plurality of burst slices. However, Beshai et al. in their related system further teach dividing, in the time

domain, a burst into burst slices (column 7, lines 12-16; column 11, lines 26-31). It would have been obvious to a person of ordinary skill in the art to divide a burst into a plurality of burst slices as taught by Beshai et al. in the system described by St. John et al. in view of Duser et al. in order to optimize the efficiency of the data transmission in the network.

8. **Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.** as applied to claim 1 above, and further in view of **Hao** (US 6,851,008 B2).

Regarding **claim 3**, St. John et al. in view of Duser et al. describe a system as discussed above with regard to claim 1. They do not specifically disclose that the length of the burst is determined further based on a packet size indicating the size of data packets which the source computer is able to send.

However, Hao teaches a system that is related to the one described by St. John et al. in view of Duser, including burst mode transmission (column 1, lines 44-48). Hao further teach the length of the burst is determined further based on a packet size indicating the size of data packets which the source computer is able to send (column 2, lines 39-67; column 3, lines 1-26). It would have been obvious to a person of ordinary skill in the art to base the length of the burst on a packet size as taught by Hao in the system described by St. John et al. in view of Duser et al. in order to efficiently group the packets and minimize the occurrence of dropped packets.

9. **Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.** as applied to claim 1 above, and further in view of **Davis** (US 5,566,175 A)

Regarding **claim 4**, St. John et al. in view of Duser et al. describe a system as discussed above with regard to claim 1. They do not specifically disclose that the length of the burst is determined further based on a round trip time of the burst transmission.

However, Davis teaches a system that is related to the one described by St. John et al. in view of Duser, including burst mode transmission (column 1, lines 11-18). Davis further teaches that the length of the burst is determined further based on a round trip time of the burst transmission (column 3, lines 64-67; column 4, lines 1-30). it would have been obvious to a person of ordinary skill in the art to base the length of the burst on a round trip time of the burst transmission as taught by Davis in the system described by St. John et al. in view of Duser et al. in order to optimize the efficiency of the data transmission in the network.

10. **Claim 13** is rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.** as applied to claim 1 above, and further in view of **Mathews et al.** (US 7,426,730 B2).

Regarding **claim 13**, St. John et al. in view of Duser et al. describe a system as discussed above with regard to claim 1, including a source computer and a destination computer. They do not specifically disclose that at least one intermediate computer located in the data path between the source computer and the destination computer is implemented as a cache storage computer.

However, Mathews et al. teach a system that is related to the one described by St. John et al. in view of Duser et al., including burst mode transmission between computers (column 5, lines 27-42). Mathews et al. further teach that an intermediate computer may be used as a cache storage computer for temporarily storing data related to the transmitted burst (column 26, lines 50-67; column 27, lines 1-17). it would have been obvious to a person of ordinary skill in the art to include a cache storage computer as taught by Mathews et al. in the system described by St. John et al. in view of Duser et al. in order to advantageously enable computers in the network to

quickly and efficiently access certain types of critical data (Mathews et al., column 26, lines 13-34).

11. **Claims 14 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.** as applied to claim 1 above, and further in view of **Chaskar et al.** (US 6,898,205 B1).

Regarding **claims 14 and 15**, St. John et al. in view of Duser et al. describe a system as discussed above with regard to claim 1. They do not specifically disclose that a burst reservation and transmission is performed based on a random burst eligibility time method, to deliver the optical burst.

However, Chaskar et al. teach a system that is related to the one described by St. John et al. in view of Duser, including optical burst mode transmission (column 1, lines 14-18). Chaskar et al. further teach that a burst reservation and transmission is performed based on a random burst eligibility time method, to deliver the optical burst, wherein a time between the time to prepare a minimum burst and the time to prepare a full pre-determined burst is randomly picked up as a burst eligibility time (column 2, lines 16-37; column 5, lines 66-67; column 6, lines 1-58).

Regarding claims 14 and 15, it would have been obvious to a person of ordinary skill in the art to transmit the burst based on a random burst eligibility time, between the time to prepare a minimum burst and the time to prepare a full pre-determined burst, as taught by Chaskar et al. in the system described by St. John et al. in view of Duser et al. in order to reduce the probability of burst blocking and thereby more efficiently transmit the data (Chaskar et al., column 6, lines 59-67; column 7, lines 1-7).

12. **Claims 16 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.** and **Beshai et al.** as applied to claims 1 and 2 above, and further in view of **North et al.** (US 7,233,970 B2).

Regarding **claims 16 and 24**, St. John et al. in view of Duser et al. and Beshai et al. describe a system as discussed above with regard to claims 1 and 2, including a control device controlling the optical data transmission in an optical burst switching mode between a source computer and a destination computer. They do not specifically disclose control burst transmission between one of at least one storage server each providing a storage portion to the shared storage network system and one of at least one storage client adapted to have read and/or write access to at least one storage portion of at least one of the at least one storage server, the storage server and the storage client being the source computer and the destination computer.

However, North et al. teach a system that is related to the one described by St. John et al. in view of Duser et al. and Beshai et al., including burst mode transmission between computers (i.e., computational devices 10 shown in Figure 1; column 4, lines 17-25). North et al. further teach that the computers may comprise a shared storage network with storage servers and storage clients (i.e., North et al. teach that one computational device may be a client accessing the storage/memory of another device acting as a server), wherein the entirety of all of the storage portions of the at least one storage server form a global block address space (column 4, lines 25-29; column 7, lines 8-10). Regarding claims 16 and 24, it would have been obvious to a person of ordinary skill in the art to include a storage server and a storage client as taught by North et al. in the system described by St. John et al. in view of Duser et al. and Beshai et al. in order to

advantageously enable a plurality of computers to combine and share memory resources for more efficient data processing.

13. **Claims 22 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **St. John et al.** in view of **Duser et al.**, **Beshai et al.**, and **North et al.** as applied to claims 1, 2, and 16 above, and further in view of **SNIA Technical Council** ("Shared Storage Model," SNIA TC proposal document, 2001).

Regarding **claims 22 and 23**, as well as the claims may be understood with respect to 35 U.S.C. 112 discussed above, St. John et al. in view of Duser et al., Beshai et al., and North et al. describe a system as discussed above with regard to claim 16, including shared storage network. They do not specifically suggest a Storage Networking Industry Association standard.

However, SNIA Technical Council teaches a Storage Networking Industry Association standard, including a second layer (e.g., page 12, "4.2 The layering scheme of the SNIA Shared Storage Model"). Regarding claims 22 and 23, it would have been obvious to a person of ordinary skill in the art to operate the system suggested by St. John et al. in view of Duser et al., Beshai et al., and North et al. based on the Storage Networking Industry Association standard, or the second layer of the Storage Networking Industry Association standard, as taught by SNAI Technical Council in order to advantageously enable users of the system to more efficiently describe, use, and build upon it by using a common, standardized vocabulary (SNAI Technical Council, pages 7-8, "2 Why a model for shared storage?").

Allowable Subject Matter

14. **Claims 17-21** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter:

The prior art, including St. John et al., Duser et al., and other references cited in this Office action, does not specifically disclose or fairly suggest a shared storage network system including the combination of all of the elements and limitations recited in claims 17-21 (and including all of the limitations of their parent claims), particularly wherein

the at least one storage server is located within a first local area network;

the at least one storage client is located within a second local area network, the first local area network and the second local area network being interconnected to form a global network;

the at least one storage server and the at least one storage client are interconnected such that in case of a read or a write access of one of the at least one storage client to one of the at least one storage server, the length of a burst to be transmitted according to the read or write access is determined based on the parameter indicating an available buffer size of the storage server or the storage client, which storage server or storage client is the destination computer of the burst transmission associated with the read or write access; and the predetermined timeout value parameter indicating a time after which improper burst transmission is assumed to have occurred.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung, whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye, can be reached at 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christina Y. Leung/

Primary Examiner, Art Unit 2613